

ABSTRACT OF THE DISCLOSURE

A bonding pad structure. The bonding pad structure includes independently built current conduction structure and mechanical support structure between a bonding pad layer and a substrate. The current conduction structure is constructed using a plurality of serially connected conductive metallic layers each at a different height between the bonding pad layer and the substrate. The conductive metallic layers connect with each other via a plurality of plugs. At least one of the conductive metallic layers connects electrically with a portion of the device in the substrate by a signal conduction line. The mechanical support structure is constructed using a plurality of serially connected supportive metallic layers each at a different height between the bonding pad layer and the substrate. The supportive metallic layers connect with each other via a plurality of plugs. Furthermore, the mechanical support structure connects with a non-device section of the substrate so that stresses on the bonding pads are distributed evenly through the substrate.